# Distribution of 100 Particles in Cases 1 to 3

## Case 1

| Particle Size (nm) | Number of Particles | Volume (nm³) | Volume Frequency (%) | Cumulative Volume Frequency (%) |
|---|---|---|---|---|
| 5 | 3 | 196 | 0.0% | 0.0% |
| 10 | 10 | 5236 | 0.8% | 0.8% |
| 15 | 20 | 35343 | 5.3% | 6.1% |
| 20 | 30 | 125664 | 18.9% | 25.0% |
| 25 | 20 | 163625 | 24.6% | 49.6% |
| 30 | 10 | 141372 | 21.3% | 70.9% |
| 35 | 5 | 112246 | 16.9% | 87.8% |
| 40 | 1 | 33510 | 5.0% | 92.8% |
| 45 | 1 | 47713 | 7.2% | 100.0% |
| 50 | | 0 | 0.0% | 100% |
| 60 | | 0 | 0.0% | 100% |
| 70 | | 0 | 0.0% | 100% |
| 90 | | 0 | 0.0% | 100% |
| 100 | | 0 | 0.0% | 100% |
| Total | 100 | 664905 | | |

## Case 2

| Particle Size (nm) | Number of Particles | Volume (nm³) | Volume Frequency (%) | Cumulative Volume Frequency (%) |
|---|---|---|---|---|
| 5 | 3 | 196 | 0.0% | 0.0% |
| 10 | 10 | 5236 | 0.8% | 0.8% |
| 15 | 20 | 35343 | 5.2% | 6.0% |
| 20 | 30 | 125664 | 18.4% | 24.4% |
| 25 | 20 | 163625 | 24.0% | 48.4% |
| 30 | 10 | 141372 | 20.7% | 69.1% |
| 35 | 5 | 112246 | 16.4% | 85.5% |
| 40 | 1 | 33510 | 4.9% | 90.4% |
| 45 | | 0 | 0.0% | 90.4% |
| 50 | 1 | 65450 | 9.6% | 100.0% |
| 60 | | 0 | 0.0% | 100.0% |
| 70 | | 0 | 0.0% | 100.0% |
| 90 | | 0 | 0.0% | 100.0% |
| 100 | | 0 | 0.0% | 100.0% |
| Total | 100 | 682642 | | |

## Case 3

| Particle Size (nm) | Number of Particles | Volume (nm³) | Volume Frequency (%) | Cumulative Volume Frequency (%) |
|---|---|---|---|---|
| 5 | 3 | 196 | 0.0% | 0.0% |
| 10 | 10 | 5236 | 0.7% | 0.7% |
| 15 | 20 | 35343 | 4.8% | 5.6% |
| 20 | 30 | 125664 | 17.2% | 22.8% |
| 25 | 20 | 163625 | 22.4% | 45.2% |
| 30 | 10 | 141372 | 19.4% | 64.6% |
| 35 | 5 | 112246 | 15.4% | 79.9% |
| 40 | 1 | 33510 | 4.6% | 84.5% |
| 45 | | 0 | 0.0% | 84.5% |
| 50 | | 0 | 0.0% | 85% |
| 60 | 1 | 113097 | 15.5% | 100% |
| 70 | | 0 | 0.0% | 100% |
| 90 | | 0 | 0.0% | 100% |
| 100 | | 0 | 0.0% | 100% |
| Total | 100 | 730289 | | |

**As the largest particle size differs in each of Cases 1 – 3, the cumulative volume frequency changes largely at the particle sizes of 40 nm and 45 nm.**

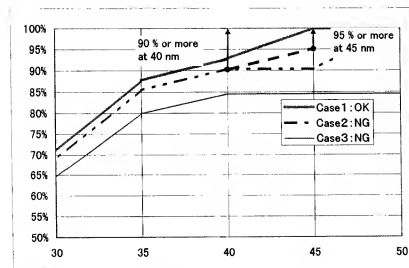EXHIBIT A

Plotting of Cases 1 – 3
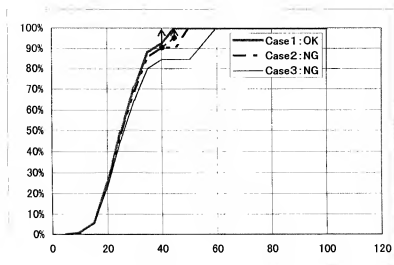


The formula (1) in claim 1 is satisfied when:
   Cumulative Volume Frequency is
       90 % or more at Particle Size of 40 nm; and
       95 % or more at Particle Size of 45 nm.



Only Case 1 falls within the scope of claims.

It is favorable that large size particles are as few as possible
because they tend to cause surface roughness.